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OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

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SOIL CONSERVATION

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Front Cover: Cosmos D. Blubaugh, Ohio soil conservation farmer, relaxes with dog, cigar and gun. Mr. Blubaugh's achievements have been noted several times in Soil Conservation magazine, most recently in September 1944. Photographer: George C. Pace.

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By VERNA C. MOHAGEN

Only a few years ago, three thousand conservationists were among the many enlisted in a national campaign for soil conservation. The Orders of the Day then included planning of farms, surveying the range, setting out kudzu crowns, analyzing effects of rainfall, requisitioning automobile parts in a work group office. Now these three thousand conservationists are scattered over the face of the earth, operating under military Orders of the Day of a vastly different tenor. And while they continue to fight our country's battles from the tundra-covered marshes of the north to the jungles of the tropics, they still find time to observe what these alien shores can teach about the ravages of soil erosion and the age-old struggle for conservation.

That is the theme of a story that can be pieced together from bits of conversations with fur-loughed men and returning veterans and from letters that have been streaming into the Soil Conservation Service all over the country—letters that are neatly typewritten, notes that are written by hand from remote outposts or hospital beds, and missives penned from fox-holes on inherited Jap-

anese stationery. These notes cannot be classed as scientific treatises on soil conservation, but they do contain a mass of observations of agricultural practices in other countries which reflect an ever-growing appreciation of soil conservation.

The writers are far too busy to be erudite. Lt. Ruel M. Hansen (conservationist, Washington), wearer of the Purple Heart and a few battle stars from campaigns in Africa, Sicily, and Italy, expresses this thought in a recent letter to his region: "I've had quite a few occasions to do some fast digging in the soil here but I wasn't too much interested at that time in the soil profile." Conservation aid Glenn McCord of Eden, Tex., writing from the banks of a fox-hole somewhere in the Pacific, must have found time even with all the enemy fire to talk conservation for he ends his short letter with a reference to the "lot of boys" he has met "who are interested in conservation and want to go to work for SCS."

THE NORTH AMERICAN AREA

The locale of the observations our conservationists are sending back to their home base is restricted only by the extent of the far-flung battle line. But the area close to home can by no means be disregarded. Conservationists from Region 1, for example, have had a chance to observe the agricultural practices of Arkansas and Colorado

EDITOR'S NOTE.—The author is assistant chief personnel management division, Soil Conservation Service, Washington, D. C. She gratefully acknowledges the help of regional personnel officers and others in making available letters and reports for inclusion in this article.

and Wyoming, and conservationists from the Pacific northwest have had equal opportunities in Maine and Iowa and Florida.

Corp. J. W. James (conservationist from Mississippi) while stationed in Colorado wrote home to tell about the "plantings and contouring that had to be made to pin down the shifting sands. . . ." Another corporal (I. N. Parent, farm planner from Georgia) noted with quite apparent pride that "just before passing a tunnel in Nebraska of which both sides appeared to be about fifty feet high and solid rock, there again was kudzu in a perfect green mass."

Third Class Petty Officer John Johnson (peacetime engineering aid in Oklahoma) reports that he hasn't permitted his war-time role of playing the trombone in the Navy band to eclipse his primary interest in soil conservation. He was selected to prepare for the Admiral a soil conservation plan for the base at Bermuda and had the pleasure of seeing the first steps taken in its application before he was transferred.

Across the continent and up toward Alaska and the Aleutians have been still other conservationist observing erosion landmarks of quite a different character. Alaska, the land of promise, made a big impression on S/Sgt. Sheryl A. Nicholas (agronomist from Nebraska). He reported that "although the land was new it showed definite signs of need for conservation" and he adds, "I hope some day to return to Alaska in some capacity of conservation and see what can be done."

"The tundra," says Sgt. Ernest A. Morrell (conservation aid, Kansas) "is a sure-fire soil-conserver and grows even on the steepest cliffs."

THE PACIFIC AREA

Letter after letter characterizes the Pacific area as the "Conservationist's Paradise." Capt. A. L. Sharp (agricultural engineer from Colorado) is convinced that "New Guinea could support literally millions of people." He states that "some of the ranchers in Region 6 would be in a transport of joy could they see the immense areas of grassland cut by clear living streams every mile or two, with shade trees scattered about." Perhaps it was homesickness that caused Edward C. Litel (Wyoming) to deal in comparisons. He found the rich black loam topsoil of New Guinea to be very much like that of Iowa.

Range conservationist Joseph F. Arnold from South Dakota reports that he was thoroughly impressed with the potential possibilities of Australia, a young, undeveloped land. Nowhere did he encounter natural evidence of serious wind or

water erosion, but at the same time he saw no examples of conservation practices having been applied to crop production methods.

Another conservationist, Engineer J. R. Wimberly from Fort Worth, observes that the Australian government is becoming interested in range improvement, which, in his opinion, is badly needed.

The May 26, 1944, issue of the "Yank Down Under" gives a prominent place in a news story to conservationist David E. Davies from Wisconsin. Says the Yank: "Davies helped farmers nurse nearly 1,000 acres of corn from seed to ear this year. For a guy from Wild Rose, Wis., getting back on the land and watching the corn grow was pretty much like home."

"New Zealanders have learned not to overgraze their lands as we have done" is the observation made by Lt. (j.g.) Francis Ritz, agricultural engineer from Utah. "Although they have some gully erosion, they don't seem to have very many conservation problems."

From New Caledonia, Lt. Charles H. Lloyd (farm planner from Maryland) reports the existence of "irrigation works" built by natives before the early white settlers arrived but which look very much like the terrace systems SCS engineers use.

Also in New Caledonia, Lt. (j.g.) Samuel Strebin (soil scientist, Region 7) found ample evidences of the desolation caused by uncontrolled erosion: "The island is covered with abandoned farms. Most farms are on 30 to 60 per cent slopes. The present farms . . . are on the steep slopes and no conservation measures are used. After a field erodes too much to farm, they move to another hillside." Some of the farms, he stated, used "bench type terraces and in many cases the level areas were only a few feet wide, extending for thousands of feet around steep hillsides." In another part of the island, Lt. Strebin observed that the "heavy rains cut deep gullies and pile up debris on roads in the valleys below or choke the rivers, "and he concludes his report with "I would like to write a pamphlet on 'Erosion in New Caledonia.'"

From the central Pacific area, Lt. (j.g.) Morris Thurston (civil engineer, California) combines an acknowledgement and appreciation of his promotion in SCS in absentia (simultaneously with his promotion in Navy rank) with a description of a real lesson in conservation and rebuilding—the transformation of a mass of rubble and debris into a base which is there to stay.

In the Hawaiian area, former engineering aid

Stanley Duckworth (Texas), now S 1/c, discovered a rather unique system of hillside irrigation which he intends to investigate more thoroughly if he ever finds time. "Once the conservation bug hits you," says Seaman Duckworth, "it goes with you wherever you go. A countryside is either good or bad; needs terraces, good grassland or over-grazed."

Capt. John Calhoun (soil scientist from Georgia) saw the need for much more work in erosion control on various parts of the islands. He reported, however, "excellent soil conservation practices being put into effect in the pineapple fields and broad-based terraces, meadow strips, and controlled drainage ditches in use." Lt. W. C. Smith (conservationist from Alabama) notes with horror that the farmers burn all of the cane stalks.

Lt. Col. John W. Thomas (drainage engineer from Maryland) reports that he has laid out approximately 75 acres of rubber trees on the contour with contour furrows and that it gave him the greatest of pleasure to "spread the gospel of conservation to a planter in the island wilds."

In the southwest Pacific, Lt. Edwin Keeney (clerk from Burlington, Vt.) "saw lots of erosion but few examples of any effort at good sound erosion control."

Sgt. F. J. Wolf (engineering aid, New York) has studied the grasses, trees, and shrubs of south Pacific islands, helped in his studies by an Australian officer formerly connected with the Australian Department of Agriculture. He hopes that "soil conservation can be included in post-war plans on a world-wide basis." When Nursery Manager Kermit A. Olson (Winona, Minn.), now M/Sgt., landed in Saipan, he promised to be on the lookout for vegetative material that might be of use in conservation work at home.

EUROPEAN-AFRICAN THEATRE

In England, in spite of his duties as administrative officer of a squadron, Capt. Theodore A. Neu-

bauer (agricultural economist from Amarillo) managed to work in a general agricultural course at Oxford. On his trips through the country he has noted that "fields are planned, plowed, and worked irrespective of slope" but feels that the infertile farmland of which he has seen a great deal was probably not brought to that condition by erosion.

From another part of England, engineering aid (now corporal) Marvin Cox of Colorado reports "an elaborate system of soil conservation in the fields—the fields are drained by under-ground tiles, which run into open ditches on the sides of the fields." In still another section, Capt. W. H. Rhodes (horticulturist from South Carolina) found it not "unusual to see rows running up and down steep slopes," and adds with a tinge of sorrow, "I haven't seen a kudzu plant since I've been here—and have found no one who knew about it."

Over in Scotland, Cpl. Hiram L. Swain, farm planner in Georgia, was surprised to find grass growing all the way to the top of the mountains and no appreciable degree of erosion throughout the length of the country.

Forester Robert S. Fisher from North Dakota was intrigued with the history and possibilities of North Africa. "In ancient times," he reported, "the mountains were forested and the land was truly the bread-basket of the Roman empire." Now that successive invasions and careless destruction have wiped out the once great forests, Capt. Fisher ponders what a reforestation program would do in a modern era.

Another Captain (Richard D. Butts) reports to his home base in Oklahoma about the "real gully washers" in North Africa and worries about the natives "not seeming to realize that it would pay bigger dividends to farm *with* the terraces instead of *over* them."

Cyril Higginson of the Engineers (formerly farm planner in Colorado) is emphatic that in



North Africa "they certainly could use some of our conservation principles . . . although the irrigated sections seem to have been fairly well taken care of."

Capt. Earl C. McKeel, agricultural aid from Mississippi, salvaged enough spare time during his stay in North Africa to observe "the widespread practice of dry-farming, big dams built for the irrigation of large tracts of land." Lt. Henry Collins (conservationist from Arizona) was also convinced that "there is much to be learned there in the art of conservation and dry land farming." "The systems of water diversion and flood irrigation in use in the high mountains and the utilization of every foot of soil," he states, "make some of our efforts at home look like play."

Lt. Col. Raymond H. Davis (project plans, Washington office) on a flying trip across middle Africa to India and Burma and back over Persia, Palestine, and North Africa, noticed the contouring in Algiers and confesses that he whiled away the time above the continents sketching in the erosion landmarks on a global map.

A conservationist from Puerto Rico, Sgt. Jose Vincente-Chandler, found in north Africa regions "where there is very badly eroded land and gigantic gullies pointing to the need for soil conservation." In these areas, he noted, "all plowing and planting is done as straight as a line of soldiers in 'dress right.'"

"Italy would be helped considerably by an intelligent soil conservation program. They don't know what crop rotation means around here, wheat being raised every year on the same soil. On windy days you can scarcely see for clouds of dust. A few shelterbelts would help this flat country and the mountains would hold much more water if reforested." So prophesies a forester from the Middle West.

Somewhere in Corsica, Capt. W. E. Zimmerman (farm planner, New Jersey) has saved up a number of aerial photographs showing the use of strip cropping, terracing, contour planting of orchards, and drainage as practiced in Italy.

Lt. Roe D. Crabtree, formerly a trainee in Region 7 and hardly well initiated in the conservation program, nevertheless finds time to report that "our biggest problem (somewhere in Italy) is soil stabilization" and that he has observed "some beautifully terraced valleys of orange and lemon groves."

Capt. R. P. Weeber (conservationist from Illinois) reports that the farm advisor's handbook and Stanley Locke's handbook on forestry have

been of practical assistance in his work in northern Italy.

S/Sgt. James M. Wise (conservationist from Sunbury, Pa.) is also collecting "somewhere in Italy" pictures of terraced areas and other examples of conservation practices. "Some of the hills," he reports, "are entirely covered from top to bottom with terraces ranging from 10 to 50-75 feet wide and probably not much longer than 300 to 400 feet. They are mostly constructed of stone and so accurately laid out that every drop of rain is caught and put to use."

"Italians follow many good soil conservation practices as a result of their natural love of the land," was the observation of Capt. James A. Wilson, conservationist from Alabama. When he returned to the States, Captain Wilson found that the Southland he had left only a few months ago somehow presented an entirely new picture—a land so new and young compared with the country he had just left—"yet thousands of acres completely ruined."

In France former trainee, A. D. Flores Kruse of Wyoming, now Lt. Kruse, missed the contour-farming of the States but noted that the French farmers did strip-crop and rotate their crops.

Sgt. D. S. Clarke (Region 2) has seen in France, Belgium, and Germany "good examples of grass sod, forested hills, and terraces."

THE ASIATIC AREA

Zone technician Warren Turner of Albuquerque writes from a Fighter Squadron base in China, that "until you've seen this country you don't know the meaning of soil erosion!"

In India, discovered conservationist John Bonomo of New Mexico (now a Lt. at an Air Base), "they are beginning to realize that they must follow a program to build up the soil, if further hunger and starvation is to be avoided. Newspapers," he adds, "advocate soil conservation and large land owners are looking to our system in the States more than ever."

Sgt. James P. Roberts, farm planner from Georgia, observed while on convoy duty "cornfields on sides of mountains that looked to be almost straight up." Without rows or terraces, he explained, "the corn was planted on level areas made by digging out little pocket-like places in the mountainside." He noted that some mountains, as high as the average Blue Ridge Mountains, were terraced all the way to the top but were not cultivated and he learned from an interpreter that the terraces were for holding the water so that it could be caught in the rice fields below.

On a trip in Iran, Sgt. Leonard A. Lyngstad, agricultural engineer, North Dakota, was interested to note that "whole mountainsides are farmed . . . irrigation ditches are made by hand and on such true levels that the whole area looks like a jig-saw puzzle. When they cross a small cut or gully," he states, "they build a bridge to run the water across on and then go around the area and on several occasions come back in the opposite direction and go under the bridge. The network of ditches must have run hundreds of miles, . . . with fields varying from 10 acres to 15 by 30 feet square."

"WHEN IT'S OVER, OVER THERE . . ."

Mr. Johnson of Oklahoma (the one who made the soil conservation plan for the Admiral) is eagerly looking forward to returning to Oklahoma as a full-fledged farm planner.

Lt. Strebin of Region 7 hopes he "can get back into soils work after the war is over" and take part in "a great post-war triumph in conservation."

Lt. B. D. Moser (soil conservationist, Oregon), after averaging 1,000 miles a month of army trucking over the roads of Italy, asks that the Service pick him a place where he "can settle down." He will no doubt be keenly appreciative of the good old American farm tractor, for he reports that he saw "a three-bottom plow with oxen pulling, kids riding, mama at the helm, and the old man coaching."

After reporting on "the enlightening experience to observe (in Malta, Sicily, Italy, India, and China) some of the agricultural practices employed for centuries, some good and some bad," Col. Paul Cunyus, former district conservationist at Mt. Pleasant, Tex., ends his letter with this caution: "Don't get the mistaken impression that this particular farm boy is planning to settle down in one of these countries. America has still got the most of the best."

Former clerk-stenographer Ernest A. Christie from Utah, now Y 1/c in the U. S. Fleet, has already laid plans for attending an agricultural college for four years before returning to SCS.

Lt. Col. Thomas of Maryland writes from Australia that "quite a few ranch owners in Australia would like to have me draw up a conservation plan for them after the war," but he is quick to add, "as to that, I am afraid my first thought will be to get back to the U. S. A."

Lt. Col. Lew R. Good (farm planner from Pennsylvania) votes from somewhere in England "Please count me in the 'aye' corner" when it comes to remaining in conservation work." More

concerned at present with "airborne identifications" and "going in," he still fills his few idle moments with books on agriculture and asks for current recommended reading.

Frank Lesesne (soil scientist from South Carolina) looks into the future from an APO address in India and hopes that he can "be assigned the duties of studying and observing the methods of drainage and irrigation with respect to soils and crops in India and parts of China."

Pfc. John Hendricks, (Personnel, Washington office) paratrooper who has dropped from the clouds behind the enemy lines in Africa and Sicily and in Italy, awarded the Purple Heart, confessed during a recent furlough that his life of adventure has inspired him to wonder about possibilities of a career in soil conservation in the frontiers of Alaska. And already he has been counseled about the opportunities for technical education under the G. I. Bill as a welcome prelude to a life-time career.

From an air corps base somewhere on a battle front, Lt. Eamor C. Nord (range conservationist of New Mexico) reports the almost unanimous aspiration "to reach the ranks of civilians as soon as possible and get our fingers back in the soil." But he wonders "can we take academic leave from our jobs with the Service in order to take some refresher courses before entering the work after leaving the Army."

Yes, educational leave will be possible for the GI's returning to SCS who want it. Some will probably wish to take advantage of the government's offer of assistance in furthering their education under the G. I. Bill. But for those who want to return immediately to active participation in the conservation program, plans have already been made for their reception.

As the inevitable aftermath of war, some conservationists will return with battle scars and a doubt in their minds that they can resume their peacetime role in the service of their country. For these the Soil Conservation Service has pledged itself to do all within its power to place them in jobs for which they can qualify. A few have already felt the reality of this policy. Skilled laborer Norbert DeLowery of Region 6, severely wounded at Guadalcanal and demobilized because of his injury, was returned to his former job. When it became apparent that he was not yet physically qualified to carry on his old duties, a search throughout the region for a suitable assignment resulted in his promotion to a guard position in the regional office.

(Continued on page 146)

DISTRICTS RIDE THE RANGE



By KENNETH FIERO

Ranchmen are increasingly aware of the importance of conservation. With the assistance of range technicians furnished through soil conservation districts, they are steadily improving the management of their ranges. The Soil Conservation Service is assisting nearly all the 532 districts now organized in the 17 western states. These districts contain more than 300,000,000 acres, well over half the country's district acreage. Most of it is used for grazing.

Assistance to districts is directed toward better forage management. Ranchmen are becoming alert to the importance of maintaining the most productive combination of forage plants. They are asking: Does my range have the right combination of plants for sustained forage production? What is needed to assure the desired composition, density, and vigor?

Strictly farming communities have been quick to get districts under way as a means of dealing

with the common problem of soil erosion. The ranch country has been somewhat slower to organize its districts, although it has been demonstrated that districts are equally well adapted for coping with the less spectacular erosion problems of the western ranges. Grazing lands, too, are susceptible to the loss of productive capacity. Quite naturally, at first ranchers were dubious about organizing districts for the purpose of engaging in contour furrowing and other forms of structural treatment. Many of these practices were not suitable for widespread application on the range. Today, many of the most ardent supporters of conservation districts are ranchers.

Consider the situation in certain Texas districts. The Highland Soil Conservation District, which covers parts of Jeff Davis and Presidio counties in the Davis Mountain country of west Texas, is an example of a section devoted almost entirely to ranching in which the district is assisting on more than a million acres. The Eldorado Divide Soil Conservation District in Schleicher and part of Tom Green Counties, and the North Concho Soil Conservation District in parts of Sterling, Glass-

EDITOR'S NOTE.—The author is range conservationist, Soil Conservation Service, Fort Worth, Texas.



A range in excellent condition. Here vigorous growth is achieved by an abundance of high-quality plants. The high density of such nutritious plants as sideoats grama, hairy grama, and little bluestem is adequate to hold the soil in place and retain a large amount of the rain or snow for use by the plants.

A range in poor condition. This range has a potential production equal to that in excellent condition. The most desirable plants, however, have lacked an opportunity to manufacture plant food necessary for their maintenance. The less plantable and more drought-resistant plants have replaced the more desirable ones.



cock, Coke, and Tom Green Counties are further examples of predominantly range districts that are dealing effectively with conservation problems on ranch lands.

Ranchmen know that ranges supporting the highest quality and quantity of forage will lose a minimum of soil and water. Hence, the initial step for improving forage resources is to ascertain the condition of the range. The condition of the range is determined by the abundance of high-quality forage plants in a vigorous growth, or the



A range in good condition. The better plants still make up a high percentage of the composition, but density and vigor are generally lower than on ranges in top condition. The taller grasses have given way to those that increase under grazing.

absence of these high-quality plants with the attendant low-value plants. For the purpose of comparing ranges that are generally similar with respect to soils, topography, moisture, and temperature, "excellent" is used for the top condition; "good," "fair," and "poor," in descending order, reflect the extent to which ranges deviate from the top condition. Thus, the range in excellent condition produces the maximum forage of high nutritive value, and the plant cover is adequate to hold the soil in place and efficiently utilize the rainfall. It is characterized by an abundance of high-quality forage that more nearly fulfills the nutritive requirements of livestock grazing the range. In contrast, a range in poor condition is dominated by low value shrubs, perennial weeds, and annual plants. There is little resistance to erosion, and runoff is very rapid. Generally, the silt load of run-

off water from such a range is extremely heavy.

A range in "poor" condition produces considerably less high-quality forage than a range in top condition. Yet, this range is capable of being improved to the same level of production represented by a range in "excellent" condition.

The classification of a range is a fairly accurate indication of its productive capacity along with the measures and management practices necessary to improve or maintain the range in "excellent" condition. In arriving at such classification, the combined knowledge and experience of the ranchmen and technicians are directed to developing management plans that will maintain maximum yields of forage.

Every rancher is interested in maintaining the more desirable forage plants, but in many cases such less desirable plants as needlegrass, burrgrass, fluffgrass, muhly grass, broomweed, and bitterweed have replaced the more palatable plants. The district provides a forage inventory that reflects the kinds and amounts of desirable and undesirable plants. This is highly important in planning future management.

Plants, in common with other living things, have essential requirements for growth. In addition to moisture, plant nutrients, and temperature, they must be allowed to retain foliage to manufacture plant food. Rest periods during growth are a practical means of giving plants an opportunity to manufacture plant food and to produce the most forage. These rest periods, along with leaving enough of the plant to facilitate absorption of the precious rainfall and to protect the soil against evaporation from hot, drying winds, are mandatory for highest forage production.

By careful observations, ranchmen and technicians to some extent have developed methods of utilizing the undesirable plants for livestock production, while at the same time restoring the better grasses and weeds. Excessive quantities of weeds and annual grasses may be grazed to advantage when they are succulent, provided the livestock are removed immediately after the harvest of the annuals to give the desired grasses the advantage of rest during their growth period.

In addition to classifying the condition of ranges and assisting ranchmen to develop management plans, the district assists with forage utilization surveys. These are made to determine the degree of use made of the range, and serve as a basis for estimating the amount of the current year's forage left on the range. The rancher applies this information to determination of adjustments in the

management plan or the rates of stocking. In the range country, the major portion of range forage is produced in comparatively short seasons. On a well managed range, forage is generally adequate for livestock during the growing season. The periods between growth are most critical from the standpoint of adequate foliage to protect the soil, to conserve moisture, and to meet livestock requirements.

Utilization surveys supply the rancher with information that will lessen the hazards of grazing during the time the forage species are dormant. These surveys are generally made in the fall. With knowledge of available forage, adjustments in livestock numbers can be made at the normal marketing season. The utilization survey enables the rancher to adjust livestock numbers upward or downward in relation to available feed resources and thus market his livestock in good bloom and prevent damage to the forage plants.

THEY SCOUT THE WORLD

(Continued from page 143)

For reorientation in the technical and administrative progress of the conservation program at home, conservationists returning from their wartime jobs will be given 1A priority for assignment to the technical short-term training schools already in operation or being set up in every region of the Service, now being utilized almost wholly for the preliminary training of new recruits.

In Region 3, where the training school (La-Crosse, Wis.) has been in operation the longest, six conservationists, veterans of World War II, have already been "graduated." One of these Hjalmer Johnson of Minnesota, formerly CCC camp superintendent, spoke of his completed course as "one of the finest courses that he could ever have taken to get back into the soil conservation work and do his duty as an engineering specialist working on farm plans," and the same kind of enthusiasm is reflected in the expressions of the other "graduates."

As time goes on, many other conservationists will be returning from distant places. They will be welcomed as reinforcements to the ranks of the conservationists at home, to drive forward together in the homefront crusade.

CHOSEN "MASTER CONSERVATIONIST"

In Kentucky recently, the Hardin County Soil Conservation District and the State Soil Conservation Committee designated R. R. Hughes as "Master Conservationist" and honored him by a public celebration at the county seat.

LAND UTILIZATION

past present future



Community pasture, Hector, N. Y., land utilization project.

By E. G. GREY and W. F. DICKSON

The basic idea of the land utilization program of the Soil Conservation Service grew out of research studies in the Bureau of Agricultural Economics and a number of state universities and experiment stations. In 1929, Congress recognized the growing need to do something about submarginal land when it authorized the Federal Farm Board to investigate the possibility of reducing the acreage of unprofitable marginal lands in cul-

tivation. Some of the first proposals involved the removal of submarginal lands from production by purchase to offset the increased production from new reclamation projects.

CHRONOLOGY

In the beginning, the land program was established as a public works program primarily, with the secondary purpose of retirement of submarginal lands from cultivation. There was also brought into the picture the idea of working out an adjustment of the agriculture of an area on a sounder basis.

EDITOR'S NOTE.—This paper formed the basis of a discussion before the operations seminar of the Soil Conservation Service, Washington, D. C. The authors are the Chief and Assistant Chief, respectively, of the Land Utilization Division.

The first allotment of funds, made available in February, 1934, totalled \$25,000,000. From then until April 30, 1935, the program was administered by the Federal Emergency Relief Administration. In August, 1934, an allocation of \$53,390,000 from drought relief funds was made, and more was promised. Just when options were rolling in from projects, virtually by the truckload, \$50,000,000 of drought relief money was withdrawn in March, 1935. Subsequently, however, \$20,000,000 was made available from Emergency Relief Appropriation funds. Thousands of options given and taken in good faith could not be accepted. A staff of letter writers was kept busy for many months answering letters objecting to cancellations or failure to accept options. There are still plenty of people stranded on poor land who would like the Government to buy their lands and help them off to a new start elsewhere.

In December 1935 an initial allotment was made of \$15,000,000 WPA funds to carry out improvement work on the projects. The allocation and withdrawal of funds, changes in procedures, etc., made for "never a dull moment" for the next three or four years.

From April 1935 until October 1938, the land utilization program was successively in Resettlement Administration, Farm Security Administration, and Bureau of Agricultural Economics. The land utilization program was given Congressional recognition when the Bankhead-Jones Farm Tenant Act became law in July 1937. The reorganization of the Department in October 1938 placed the Land Utilization Program in the Soil Conservation Service. During a life span of nearly 11 years, 6 years have been spent in the Soil Conservation Service.

In the beginning, there were four types of submarginal land purchase projects:

(1) Lands largely within Indian Reservations, these projects being planned by the Office of Indian Affairs; (2) lands acquired for wildlife refuges by the Biological Survey; (3) lands for recreational purposes approved by the National Park Service, and (4) agricultural demonstration projects.

These four purchase programs were coordinated when the Resettlement Administration was established by Executive order in 1935.

Altogether, over 11,000,000 acres were purchased. The largest acreage was in agricultural demonstration projects amounting to 9,500,000 acres, 750,000 acres in Biological Survey projects, nearly 1,000,000 acres in Indian projects, and al-

most 400,000 acres in National Park projects.

Of the 9,500,000 acres in agricultural demonstration projects, 1,000,000 are managed by state agencies under long-term leases, 1,750,000 were transferred to other Federal agencies for administration, including over 1,000,000 acres to the Forest Service, and lesser amounts to the Fish and Wildlife Service, War and Navy Departments, Indian Service, Grazing Service, and the National Park Service. This left nearly 7,250,000 acres to be administered by this Service under title III of the Bankhead-Jones Farm Tenant Act.

Let's take a look at some of the more important improvements made on the land now under the administration of the Soil Conservation Service. Some 723,000 acres have been seeded or sodded, 8,300 miles of new fences have been constructed, 2,913 miles of old fences purchased with the land have been repaired, nearly 4,000 dams, springs, wells and dugouts were constructed or repaired to provide water for livestock. Of the 607,000 acres of land in timber production, over 48,000 acres have been planted to trees since the lands were purchased.

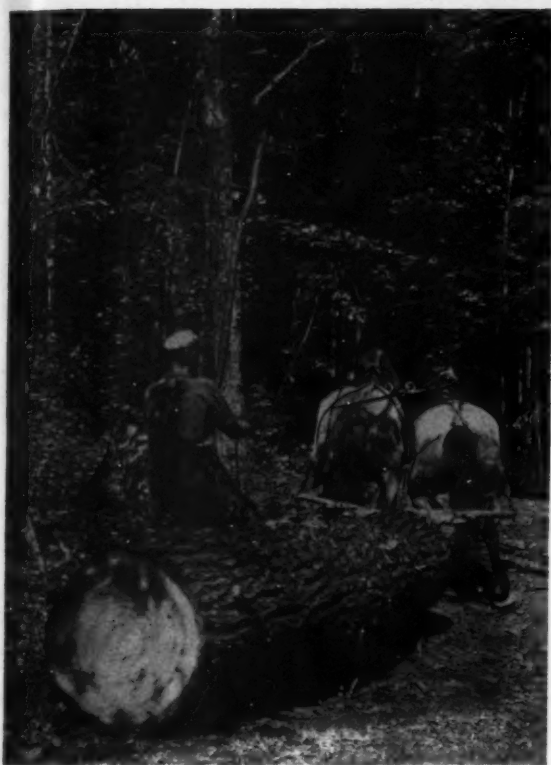
About 16,000 acres are used for recreational purposes, with cabins constructed on 13 different projects, group camps on four projects, and 83 separate picnic areas.

In keeping with the Service's efforts to encourage the dedication of every acre to the use for which it is best adapted, nearly 27,000 acres have been fenced out for wildlife, and 98 ponds for wildlife have been constructed. Appropriate land use practices have been adopted to encourage wildlife.

There were over 12,000 families living on the land acquired in connection with agricultural demonstration projects. A large number were tenants. Although a complete report is not available, sufficient checks have been made to know that most families are better located to make a living than formerly.

The farmers and ranchers who use the land owned by the Government are the ones who have received and will continue to receive the greatest benefit from the program. Nearly 8,000 permits were issued during 1943 authorizing the use of lands under the administration of the Soil Conservation Service for grazing, cropping, haying, timber harvest, seed harvest, and a few other miscellaneous purposes. In addition, nearly three-fourths of a million people have used the recreational facilities.

The projects classified the farmers and ranchers receiving permits into three groups. Of 6,036 op-



Timber operator skidding logs on the land utilization project in Bradford County, Pa.

operators, it was reported that 1,109 did not require the permits they received in order to make an adequate living, 2,702 needed the permits to make an adequate living, and 2,222 required larger permits. Some of this latter group will receive larger permits and will be lifted into the middle group as more of the land is brought into production and as that which is in production becomes more productive. Some of the groups not needing permits to provide an adequate unit are holding temporary permits which will be reduced as the smallest permit holders are able to expand operations.

Not only are these operators benefiting by the privilege of using the acquired lands, but experience has shown that it is easier to get conservation practices initiated on the privately owned land and other lands they control.

In many areas, much is accomplished by example. In others, the main factor is the ability to shift to a less intensive type of agriculture because more land is available to operators. The security of tenure achieved through use privileges and the leasing and management programs of local organizations, such as State grazing districts, graz-

ing associations, and soil conservation districts, has also contributed tremendously to the desire on the part of farmers and ranchers to use all lands properly. Our aim is for all permittees to use the other lands they control in accordance with good conservation practices. We think this objective can be reached through educational processes.

In discussing the accomplishments of the program, the public works aspects should not be overlooked. During the time when employment was so very pressing over \$60,000,000 was spent on improvements. This money provided work for men on relief and many a man was able to provide food and clothing for his family through wages received on these projects. Particularly noteworthy is the fact that many rural people on relief were given employment which would have been difficult to obtain otherwise. As an additional by-product, a large number of men learned skills which helped tremendously in obtaining regular employment as carpenters, masons, mechanics, and bulldozer operators.

Twenty-five percent of the receipts from fees for land use are returned to the counties, in lieu of taxes for school and road purposes. It is recognized that this payment is not always equitable, particularly during the first few years of public ownership when receipts are low. Legislation has been recommended by the Department of Agriculture to provide for certain guaranteed minimum payments which would satisfactorily meet that problem. Even without this legislation, the record is not too bad. In some instances the counties were able to bring about savings in expenditures through the consolidation and closing of schools made possible by land purchase. Roads were closed. Large sums in delinquent taxes were paid to the counties out of the purchase price of the land at the time title passed to the United States; these helped many counties to retire debts and get on a sounder financial basis.

In 1943, the total receipts from use permits amounted to around \$450,000, and it is anticipated that at least \$500,000 will be received for 1944. This is almost equal to the amount spent for management.

HIGHLIGHTS OF SERVICE POLICIES IN MANAGEMENT

The use which may be made of Title III lands is rather definitely laid down in Title III of the Bankhead-Jones Farm Tenant Act and Department policies.

The law states: "The Secretary is authorized and directed to develop a program of land conservation and land utilization, including the *retirement* of lands which are submarginal or not primarily suitable for cultivation, in order thereby to correct maladjustments in land use. . . ."

The Secretary of Agriculture stated the Department policy as follows: "The term 'retirement' used in the Act clearly implies shifting land which is submarginal in its present use or not primarily adapted to cultivation, to a use for which it is physically and economically better suited. . . ."

Service policy, therefore, provides that purchased lands formerly in cultivation will be devoted to a less intensive use, such as for range, pasture, woodland and wildlife.

USES

Over 82 percent of the LU land is used for grazing, or a total of 5,885,000 acres. Another 400,000 to 500,000 acres will also be used for grazing as soon as it can be seeded. This will make nearly 90 percent devoted to grazing.

About 8.5 percent or 607,000 acres is in timber production, some of which will need planting to speed up the process of transition to desirable timber stands.

The rest of the acreage, about 100,000 acres, is used for cropping, hay production, recreation, wildlife, and miscellaneous uses.

The objective of management is to provide that Title III lands supplement the privately owned lands of nearby farmers and ranchers to the end that the whole agricultural economy of the area is made more secure. The policies guiding the distribution of use privileges are designed to assist the smaller farm or ranch operators to achieve at least a minimum-size economic unit.

Management responsibilities are carried out first, through direct management by Service personnel, and second, through local land management agencies. The latter is preferred.

Over 4,000,000 acres of grazing land is managed through 25 cooperative grazing associations and three soil conservation districts. In addition, three soil conservation districts manage small acreages of Title III lands.

The grazing agreement entered into between the Service and the local agency is essentially a lease which sets forth the principles under which the land is to be managed. The Service retains authority to establish fees, set the seasons of use, determine the qualifications of applicants, determine the manner in which permits are granted and, together with the association, determine the grazing

capacity and rate of stocking for all lands controlled by the association.

The association or district issues permits, collects fees, establishes commensurability standards, rules of the range, settles disputes between members, maintains fences and stock water facilities, and in general carries out all the details of land management under the guidance of the broad policies laid down in the agreement and in specific Service instructions. The people have a voice in carrying out their own program, and the Service is relieved of the responsibility of settling disputes between neighbors.

The Service would like to see all Title III lands managed by local groups, but there are some of the "old program" projects which do not at this time seem adapted to such management. These include projects where forestry predominates or where recreation is important.

Grazing privileges on the range projects are distributed on a preference system. A preference is expressed in terms of the number of animal units the permittee is qualified to graze on government lands (or government and association lands) during the grazing season. A preference remains in effect so long as the holder controls the feed base and other land on which the preference is established and abides by the terms of his permit. The essentials of the system are as follows: In order to qualify for a preference, an applicant must be a farm or ranch owner or operator, must live within the project area, and must be a citizen of the United States. After meeting these requirements, the size of an applicant's preference is based upon the number of head of livestock his owned and leased feed-base lands are capable of maintaining for a period of four to six months, the number of head of livestock he previously grazed on lands subsequently purchased, and the need for grazing either to secure proper use of his feed-base lands or to provide additional grazing to increase the size of his operating unit.

Predicated on the number of animal units for which the applicant has established a preference, a permit is issued each year to cover the number of animal units which may be grazed each season. As a result of this system, operations are stabilized; each preference holder knows that each year he can depend on a definite amount of grazing on government lands.

The Weld County project in northern Colorado is a good example of the results of the purchase of lands submarginal to farming and of overgrazed lands, the consequent improvement through range



seeding, water development and controlled grazing, and the stabilization of use through a system of preference permits.

Let us examine the area within this project now managed by the Crow Valley Cooperative Livestock Association. In 1935, the community was largely on relief. Thirty percent of the land was subject to tax sale. Of 22,000 acres State land, 6,700 were not leased. Seventy thousand acres of plow land were blowing. Range lands were overgrazed due largely to the fact that from 2,000 to 3,000 "day herd" cattle and horses were grazed in trespass in this area. The calf crop averaged about 60 percent and the average operating unit was 360 acres.

In 1940, no persons were on relief, all tax sale land had been redeemed, all State land was leased, out of 70,000 acres of blowing land only 500 were not completely stabilized, range forage production had increased due to controlled grazing, the trespassing stock had been removed, land was leased on the basis of its grazing capacity, the calf crop had increased to about 90 percent, and the average size operating unit had increased to 1,950 acres.

In the East and South distribution of use privileges presents a number of problems not encountered in the West. In the West, the pattern of land purchase was designed to facilitate adjustments in operating units and consequently the lands acquired were largely scattered among operating units. In the East, the public works aspect of the land purchase program was foremost with the result that lands purchased were largely blocked up. The farmers who could benefit from the development of pasture, for example, must come from outside the area, rather than from within, as in the West.

We are now working with the four Eastern

Stock do not have to travel more than 2 miles for water on the Briggsdale, Col., land utilization project.

regions to establish a priority system to select farmers qualified to receive grazing privileges on government pastures. Under our tentative procedure, applicants whose farms adjoin or those living closest to pastures, who need supplemental grazing privileges, will be given priority over those living at a great distance.

The second most important use of Title III lands is for timber products. Service policies provide for disposal of timber products by permit or advertised sale. Wood cutting permits are distributed on a priority basis. First priority goes to persons living in or near the project who need wood for fuel, fence posts, poles, lumber or other domestic uses. Second priority goes to applicants living within or near the project area to provide a supplementary income. Third priority includes all other applicants.

Where the amount of timber to be removed is greater than can be cut under permits or where there is no demand for permits, it can be sold to the highest bidder.

The objective of all timber sales at this time is, aside from a desire to contribute to the war effort, primarily a means of cleaning up the woods in order to leave a thrifty stand of growing timber.

Recreation constitutes a minor use. The Service maintains some picnic areas and any development of new recreational areas is restricted to picnic areas for day use.

It is worth noting that the opportunity provided for recreation on the 6 water conservation projects in the Panhandle of Texas, and on the 14 lakes constructed on these projects, including Crab Orchard Lake in Southern Illinois with a surface acreage of 7,000 acres—the largest body of water

in that State—afford probably the greatest opportunity for recreation available to hundreds of thousands of people.

The policy of the Service relative to wildlife on LU projects is stated as follows: "The principal objective of the Service with reference to wildlife will be the development and maintenance of suitable wildlife habitats consistent with sound land use practices." The hundreds of stock water reservoirs constructed on LU projects in Montana and the Dakotas have furnished nesting grounds to a very significant number of ducks each year. Many LU projects have been used to provide testing grounds and demonstrations of wildlife planting.

OUTLOOK

At one time, it was estimated that there were 76 million acres of land in cultivation which should be retired. Some 11 million acres were purchased under the submarginal land purchase program. The now discontinued National Resources Planning Board recommended the purchase of 20 million acres of submarginal lands along the eastern seaboard. The conservation needs survey has indicated that some 46 million acres of land should be retired to less extensive uses.

The field in which there is a real need and an opportunity is in connection with the district program. The Secretary's memorandum of September 25, 1937 had this to say:

"A program of acquisition of submarginal farm land cannot be fully effective in correcting maladjustments in land use unless corollary measures are taken by Federal, State, and local agencies and by farmers themselves to guide land use into desirable channels.

"... Special consideration will be given to the purchase of submarginal farm lands:

"1. Where such purchases, in addition to meeting the requirements of Title III, will also forward other land use programs with which the Department is concerned, such as, for example, the programs of soil conservation, ...

"2. Where the land use adjustment objectives of the program will be extended to related lands not purchased under the Act, through the application thereto of other Federal, State, or local measures for conservation control, as, for example, in:

"Areas where soil conservation districts have been organized or have petitioned for organization."

Therein lies an opportunity for the Service to bring another big gun to bear upon its objective, the stopping of erosion, and at the same time work

out some economic adjustments in nearby farms through making pasture and timber available.

At the present time the Service is cooperating with more than 1,100 soil conservation districts. We have seen, as on the Honey Hollow watershed, that the ultimate goal must be a complete conservation plan covering every acre within a watershed.

In almost every district, if not in every one, there are farms or idle lands which must be placed under a conservation plan if the over-all conservation program is to succeed. This is where the authority to acquire lands can be used to high advantage.

The need for acquisition of submarginal lands in order to carry out a conservation program was recognized by the National Resources Planning Board. Its report of September 1942, stated that "... a rounded program for soil conservation, erosion control, and run-off retardation would require the public acquisition of submarginal lands. ... The continued cropping of lands unsuitable for cultivation results in further destruction of the soil resources and may affect the value of other, and frequently more valuable, lands. The families attempting to make a living from such lands generally have insufficient resources to carry on a soil conservation program on their farms. They are usually unable to make the shift to proper land use; for instance, from cash-crops farming to grazing, and still secure a living from their farms. ... It is often possible, ... through the acquisition of relatively small acreages, so to change the pattern of land use and occupancy as to enable a substantial proportion of the families to build up operating units capable of supporting a family after allowing for soil maintenance."

The Chief stated in *Soil Conservation* magazine (February 1940) that "In terms of land utilization we have expanded our thinking and our action from promoting sound land use on individual farms to carrying out improved land-use programs over large areas that include groups of farms and much land that is not, or should not be, used for cultivation. ... Of course, the purchase of land is merely a means, not an objective, in the program. ... Specifically, there are few, if any, areas in which conservation of the land can be achieved only by working on individual farms. Sooner or later, in many farming areas of the United States, we reach the point in erosion control work beyond which it may not be possible to produce the necessary results. It may be that some farms, for example, are too small for the type of agriculture

1944 NATIONAL SAFETY AWARD

When Howard H. Wilson, regional Soil Conservation Service safety engineer, was presented with the winner's plaque at the National Safety Congress in Chicago early in October, it marked the third consecutive year in which a Service fleet has been awarded this outstanding honor in the National Fleet Safety Contest. In 1942 and 1943 champion Service fleet was that of Region 2, Spartanburg, S. C.

The Soil Conservation Service Region I with headquarters at Upper Darby, Pa. won the country-wide inter-city trucking contest, in which both private and governmental fleets competed. The region's trucks traveled 1,375,000 miles during the year without so much as scratching a fender.

Special certificates were also awarded to the following regional Soil Conservation Fleets:

Region 1, Upper Darby, Pa., for placing in the top 20 percent in the Group 2 Passenger Car Contest.

Region 2, Spartanburg, S. C., for placing third in the Group 2 Passenger Car Contest; also, for placing in the top 20 percent in the Private Inter-City Trucking Contest.

Region 3, Milwaukee, Wis., for placing in the top 20 percent in the Group 1 Passenger Car Contest.

Region 7, Portland, Ore., for placing in the top 20 percent in the Group 1 Passenger Car Contest.



that will conserve the soil and at the same time support a family. On the other hand, there may be farms on which so much land is classed as unsuited to cultivation that it is rightly termed "sub-marginal." Here is where the land utilization approach steps into the picture.

The Board of Supervisors of a soil conservation district is the logical group to designate lands which would need to be purchased in order to carry out a complete conservation program in a district. Such a program of public land acquisition based upon the need of acquiring non-conforming lands in order to carry out a complete conservation program in an area would be in furtherance of Title III.

The wholesale acquisition of lands is not suggested but only of tracts scattered here and there through a district when there is no other way to handle these lands and public acquisition is the last resort.

Certain work unit leaders and district conservationists are already thinking along these lines. In one area in Oklahoma, characterized by small holdings and sandy soils, where crop production is a high risk type of agriculture, the work unit leader is building up a card file in which are listed those

farms which are too small to maintain a family, with the hope that some day funds will be available to purchase these lands and convert them into community pastures.

In Whitfield County, Ga., where the LU project is contained within a soil conservation district, the location of each cooperator is marked on a map. Asked why practically all of the cooperators were grouped in the area in which the Title III lands are located, the district work unit leader replied that, first, the work of establishing pastures, sericea and kudzu, on lands formerly in cultivation, served as a demonstration of proper land use and second, that it was easier to write a farm plan where provision could be made for supplemental pasture or for additional hay. He went on to say that he could draw up a much better farm plan in such cases, than where the plan had to be confined to the farm's own small holding. The district conservationist, who has five work units under his supervision, remarked that he wished he had a land utilization project in each of his work units. This serves to emphasize the fact that the Service has in such a project one more tool which can be used to assist soil conservation districts in stabilizing farm soils and economy.



A LOOK AT ETHIOPIA

By A. T. SEMPLE

Who has not heard of the fertility of the Valley of the Nile? For thousands of years the flood plains of the Nile have been enriched by soil carried two thousand miles or more through the desert from the highlands, where rainfall is abundant. One main tributary of the Nile, known as the Blue Nile rises in Lake Tana in Ethiopia. For several hundred miles after leaving the Lake, the water flows through a deep canyon which dissects a fairly level plateau with an elevation of approximately 8,000 feet.

In places this plateau is broken by rugged mountains 12 to 13 thousand feet high. Even steep mountainsides with slopes up to 100 percent are intensively cultivated. The people shun the

Tree-crotch hoes with steel points break the soil 200 miles south of Addis Ababa, where mulch tillage is a common practice. The soil is so full of humus that one could work it with bare hands.

warm tropical valleys, where malaria is present, and cling to the cool and healthy highlands.

There are millions of these plateau and mountain people in Ethiopia. With a yoke of humped zebu oxen and a wooden plow, they cultivate about 10 acres per man or 5 acres per ox. The soils are principally black brown or reddish brown clay loam or clay, developed from residual material. In many places stones occur on the surface and imbedded in the soil. The principal crops are teff, maize, grain sorghums, barley, wheat, flax, cotton, peas, and neuk. The latter is a small black seed from which a very palatable oil is extracted. An annual grass known as teff produces a very fine seed which is ground between stones and made into cakes resembling our buckwheat cakes. This is

EDITOR'S NOTE.—The author is principal animal husbandry specialist, American Technical Mission to Ethiopia, Foreign Economic Administration.

one of the staple foods of the country, and great quantities of maize are also eaten.

In such a watershed that has been cultivated for many centuries, what keeps the good topsoil in place and prevents the subsoil from coming down to bury the rich valley land of Egypt?

In the first place, most of the fields are small and contain less than 5 acres. Most of them are laid out approximately on the contour. With the use of crop rotations, and through a great variety of crops, an effect somewhat comparable to that of contour strip cropping is attained. Much of the plowing to prepare the land for seeding is also on the contour. The land is usually plowed twice before seeding and much hand work is done to destroy the weeds and to remove chunks of grass and rhizomes. The land is never harrowed. All seeding is broadcast by hand. The wooden plows have only a small iron or steel point on the end of a stick running through the rear end of the crooked pole beam. The upper end of the stick serves as the handle for the plow. Above the point of the plow there is a sharp V-shaped frame which

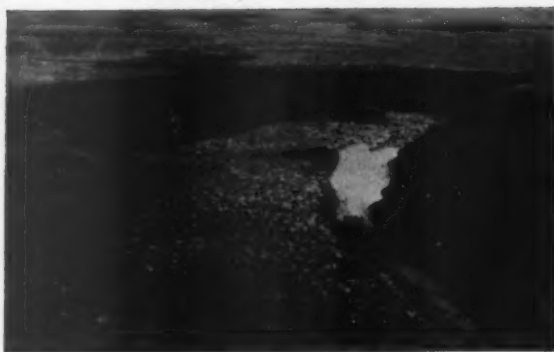
Typical Ethiopian countryside 100 miles west of Addis Ababa; in foreground, preparations for seeding teff. Rhizomes of sod grasses are stacked in piles to dry and die.

tends to loosen the ground but there is no moldboard effect to turn it over. Thus, the topsoil is not turned over, and the grass roots and crop residues remain on top to increase the rate of rainfall absorption and reduce the speed of water that may start to run off. The rough unharrowed surface also facilitates absorption.

With broadcast seeding and practically all hand cultivation or weeding where such treatment is necessary, there are no rows up and down hill to form ditches to hurry soil-laden water off the fields. Neither are there contour rows to fill up with water, break over in the low places and start gullies down the slopes.

On the steeper slopes, all the fields are bench-terraced by the use of stones, sod and other vegetation. Usually the field above each bench-terrace has a different crop from the field below the terrace. One may count 8 to 10 such bench-terraces on many long hillsides. In some localities it is a common practice to pile grass roots, weeds and crop residues on the contour, to form erosion barriers after the field has been plowed. In others, luxuriant growths of cornstalks, weeds and brush are cut down to form a mulch 2 or 3 inches thick.





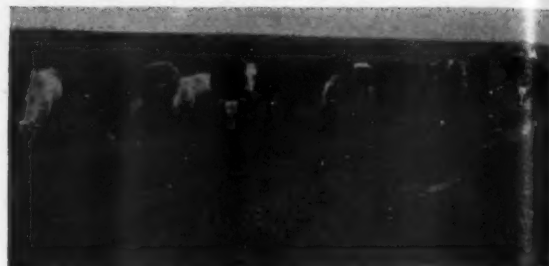
The soil that was here has gone to Egypt. A 12-foot gully on the high plateau 100 miles north of Addis Ababa, in an area where the grass is overstocked and too much land is in cultivation without adequate soil conservation measures.

Then barley is sown. Soon there is a thick luxuriant stand of young plants. On such small fields, even on very steep slopes, there is practically no erosion.

In all Ethiopia there are no drainage-type terraces. This creates a problem, since a large part of the country received 40 to 60 inches of rainfall in a period of approximately 3 months. On probably 10 to 15 percent of the fields, drainage furrows are plowed, usually at intervals of 15 to 20 feet. They are made 6 to 8 inches wide and deep with the wooden plows. Occasionally there is some washing in the bottoms of these furrows but usually one sees clear water drainage from the cultivated fields.

The real key to the preservation of the productivity of the soils of Ethiopia is grass. By far the largest part of the high country is covered with a dense sod or a heavy growth of bunch grass. Volunteer grass enters the rotation of crops as often as every other or every third year. In some of the very high, cool country, where organic matter breaks down very slowly, it is a common practice to pile the sod and burn it in order to raise a crop. It is estimated that 25 to 30 percent of the high plateau and mountainous country is in cultivated crops each year. Often the sod lives through this period of cropping and is ready to grow again as soon as the land is left fallow. Many of the sod grasses are rhizomatous, as well as stoliferous.

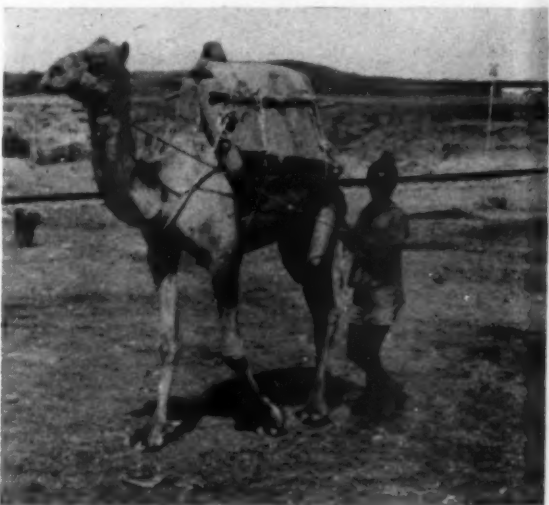
In spite of all these favorable conditions, there is much more erosion than one cares to see. Over 200 miles south of the capital, great hills are completely abandoned on account of excessive erosion. Near the capital, there is considerable gully-erosion. In the northern quarter of the country



Typical zebu cattle on the high plateau 100 miles north of Addis Ababa.



Sacks of grain in the marketplace at Addis Ababa.



A common means of transport in eastern and southern Ethiopia

there is much badly eroded land. Sheet erosion has removed most of the surface soil from the cropland. The grazing land has been so badly used that a large part of it is used only for grazing goats.

In general, erosion conditions are worse on

grazing land than on cropland. As in most other parts of Africa, there are no fences. During the growing season for the crops, each owner is required to keep his cattle on his own land. This is done by herding. The cattle are very carefully watched day and night. Large herds are often bedded on small fields to get the benefit of the manure. After the crops are harvested the stubble fields are open to all comers. Fields may be fallow for several years, but no legumes or grasses are planted to help in restoring organic matter or nitrogen. There are indications that some farmers watch the natural succession of plants and await the appearance of certain indicator plants before they plow the land for crops again. Thus, does shifting cultivation or, in reality, a rotation of crops and sod grasses maintain the productivity of the land through the centuries. But the competition of the herds and flocks for grass causes much land to be severely overgrazed.

Furthermore, cattle are a favored medium for the accumulation of wealth. In the eastern and southern parts of the country, where arid to semi-arid conditions exist, the people are almost wholly dependent on their cattle, sheep, goats and camels. In these parts, among some other nomadic people, cattle serve as a medium of exchange in selecting wives. A wealthy man may give his bride's father as many as 100 cows. In keeping with these age-old traditions, cattlemen sell cattle only as it is necessary to secure money for paying taxes, making a trip to the capital or to meet some other of the very few demands they have for cash.

In the high plateau sections, where as much as 50 to 75 percent of the land is in cultivation, a very large part of the cattle being kept are oxen, used for plowing the land. As the crops are raised to serve as human food the oxen are almost wholly dependent on the grazing land adjoining the fields for their maintenance. Consequently, as the percentage of land in cultivation increases the intensity of grazing and subsequent erosion also increases.

On the whole, the relations between population, food requirements, land use, draft animals, methods of cultivation, and the maintenance of soil productivity are very delicately balanced. Any introduction of modern agricultural machinery such as moldboard plows, harrows or tractors would be a dangerous innovation unless adequate provision is made for the application of a complete conservation program.

Upside-down farming with big fields, on a commercial basis, would make such radical changes in

soil-water-crop relationships that irreparable damage would be done to the topsoil before the Ethiopian farmers could learn, through their own experience, to cope with such problems. It has happened in the United States, in South America, in other parts of Africa, and it can happen in Ethiopia unless soil conservation is coincident with the modernization of its agriculture.

COUNTY OUTLAWS WOODS FIRES

By L. J. LEFFELMAN

Greene County, Ga., where from one-half to two-thirds of the woodland area of the county was burned over annually prior to 1942, is now adding an estimated \$75,000 a year to the value of its timber through voluntary forest fire control.

Although the principal source of income in the county is from its timberland, the only area that had organized fire protection before 1942 was the federally owned land in the North Central Georgia land utilization project under administration of the Soil Conservation Service.

In the spring of 1942, Project Conservationist E. V. Brender, County Agent Francis Bowen, and George F. Powers, at that time work unit conservationist in the Piedmont Soil Conservation District, organized the Greene County Forest Fire Control Program. Every person in the county was given an opportunity to cooperate by giving funds, labor, materials, or time.

Fire pumps, fire rakes, shovels, and axes were furnished by the land utilization project. Two local lumber companies donated lumber for construction of tool boxes, which were built by CCC boys. Nails, hinges, and locks were furnished by the county commissioners, and paint was donated by the board of education.

The Farm Security Administration, vocational teacher, school and county officials assisted in many ways. The county grand jury went on record as supporting the organization and warned that woods burning was permanently outlawed in Greene County. The circuit judge, solicitor, and the sheriff, were especially helpful.

As a result of the program, woods burning has been almost eliminated. Only 14 fires occurred in 1942 and less than 2 percent of the timberland of the county was burned. In 1943, the area was reduced to 1.6 percent and an even better record is in prospect this year.

EDITOR'S NOTE.—The author is chief, regional land management division, Soil Conservation Service, Spartanburg, S. C.

KUDZU CLUB HONORS R. Y. BAILEY

Much has been said and written in recent years concerning the wonder-working new plant of the South, kudzu.

One man, R. Y. Bailey, was largely responsible for lifting kudzu out of obscurity into prominence. He it was, more than anyone else, who discovered its practical potentialities and persuaded farmers to give the plant a trial. He was phenomenally successful in getting kudzu into its proper place in Southern soil conservation. His fervent enthusiasm was infectious, so much so that a bit more than a year ago a unique organization, the Kudzu Club of Georgia, came into being. At the second annual meeting of this club, in November, Dick Bailey was honored with a special citation for "distinguished service to agriculture." The citation, which was presented by Channing Cope, president, read as follows:

THE KUDZU CLUB OF GEORGIA A CITATION FOR DISTINGUISHED SERVICE TO AGRICULTURE

The fifty-first birthday anniversary of RICHMOND YOUNG BAILEY occurs upon this fifteenth day of November, nineteen hundred and forty-four, happily coinciding with the date of the second annual meeting of the Kudzu Club of Georgia.

Since RICHMOND YOUNG BAILEY is among the members present at this meeting, the Kudzu Club of Georgia extends to him greetings.

And, in recognition of his many valuable services in the cause of soil conservation, awards him this Citation.

While at the Alabama Experiment Station, RICHMOND YOUNG BAILEY became interested in the possibilities of Kudzu as a means of restoring the most fundamental requirement of human life—the fertility of the soil. He pursued research work and experiments over a period of many years in the face of indifference, skepticism and ridicule. Later, as Regional Agronomist of the Soil Conservation Service, he has continued his study and active advocacy of Kudzu.

Largely as a result of his pioneering efforts, it has become as established and outstanding hay and forage crop in the Southeast, with 400,000 acres in cultivation.

Future generations in the South, strong, healthy and prosperous by reason of the bountiful returns from their rich earth, will have cause to hold his name in highest esteem.



R. Y. Bailey and Channing Cope.

To RICHMOND YOUNG BAILEY, scientist, agronomist, humanitarian and patriot, the Kudzu Club of Georgia desires to present this token of its esteem and accordingly awards to him this citation of DISTINGUISHED SERVICE TO AGRICULTURE.

By order of the Board of Directors,

Channing Cope, President
Thos. L. Asbury, Secretary

To this citation, Mr. Bailey made the following reply:

"I am glad to have had a small part in helping to bring this valuable crop into its place in southeastern agriculture. Kudzu, if given a reasonable chance, can heal and protect our damaged acres. It can help us use profitably a vast acreage of idle and at present unproductive land. Increased production of grain crops and forage that can result from proper use and treatment of this land will enable us to eat bread from our own fields and meat from our own flocks. Last, but not least, when we use all our land properly we may produce and sell our share of this nation's livestock products."

WOODLANDS FOR MEMORIALS

One-acre woodland memorial areas to honor men and women who have given their lives in the service of their country in the present war will be established throughout the Little River (Ga.) Soil Conservation District.

The plan for establishing the memorial woodland areas was suggested by G. B. Lamkin, of Evans, Ga., one of the district supervisors, and

was unanimously adopted by the district's board of supervisors.

Individual memorials will be established in the home community of the service man or woman. The memorial areas will be located on highways and will be marked with bronze tablets set in Georgia granite.

Title to the woodland areas will be in the Little River Soil Conservation District. Management of the areas will be under supervision of the district supervisors and will be in accordance with sound woodland management practices.

Since the plan was adopted by the supervisors, several offers to give land for the memorials have been made by local people.

The Little River soil conservation district comprises McDuffie and Columbia counties.

REVIEWS

FARMING FOR SECURITY. By William B. Duryee. Published by Whittlesey House, a division of the McGraw-Hill Book Company, Inc. 1943.

Mr. Duryee draws upon his vast experience in teaching and farming and upon that of his many friends in the State of New Jersey to set forth a design for living in the country. He recognizes the advantages of such a living, while pointing out the pitfalls and setting up signposts for the guidance of those planning a life on and from the land.

The author attempts to avoid the too-rosy picture of farming painted by an enthusiast, as well as the dour viewpoint of the man who predicts disaster for anyone attempting to return to the land. He attempts, rather, to present a true picture for those who want to know the facts.

The book points out clearly the great need for a true love for the land, and for things growing upon it, if any farming venture is to be a success. It also urges strongly the need for sufficient capital in the form of savings or an income to meet obligations while getting established.

Food, shelter, and clothing are the three basic needs of mankind. The author shows how a place in the country can provide the first two and the resources for acquiring the third. The book makes clear that successful country living is definitely a way of life, not a hard-hearted, half-apologetic imitation of city ways.

The philosophy of security is tightly woven throughout. The first chapter, "Security in Today's World," has much to show the advantages of country living in meeting this fundamental need of every family. The raising of most of the family's food, the more practical type of clothing worn in the country, the many ways of meeting higher income taxes and future economic depressions are all advantages clearly shown by successful country living.

Very good advice is given in the second chapter on the kind of farm to buy. Mr. Duryee makes the sound point

that the farm should meet one's requirements, which vary widely with the individual, and that such a farm should wear well. He emphasizes the importance, in buying a farm, of having certain specifications in mind and not permitting oneself to be "sold" by one's own impulse or the high-pressure methods occasionally employed by people having poor property to sell. Mr. Duryee enumerates some important items to consider bearing on the type, number and condition of buildings, the farm site; the type of soil and extent of erosion; field management for conservation farming, and the great importance of building and maintaining high soil fertility. Here are some truly valuable suggestions for successful farming for either experienced or non-experienced men.

In looking about for a place to establish a home in the country, the importance of choosing a good farming areas is shown. The type of farming desired should be in harmony with soils, climate and available markets. In view of the fact that one does not move to a farm for the purpose of withdrawing from the world or to become less interested in what is going on, advice is given to look closely to the type of community in which the prospective farm is located. Emphasized is the importance of a progressive minded community, modern schools, churches, and desirable social activities.

Mr. Duryee devotes an entire chapter to the importance of good soil and its value in making for success or failure of a farming enterprise. He endeavors to point out some of the fundamentals to give a better understanding of soil types, how they originate, their weak points and their strong points. He also shows the importance of proper land use and past methods of management upon the present fertility of the soil.

Some very sound advice is given on the question of the price a person should pay. Here, again, variations are factors, much depends on size of farm desired, soil, location, buildings, and personal desires of the individual buyer. However, for successful long-time farming the average cost per acre of about \$100 is given as a sound figure if it is to be repaid from the land itself.

An attempt is made by Mr. Duryee to answer the very good question of "What shall we use for money?" He discusses the different systems of loaning money on farming from banks to the various government agencies. He emphasizes the disadvantages of high interest rates, particularly the type paid if one has to buy machinery, fertilizers, seed or other farming needs on time. Sound personal advice naturally can't be given in such a short chapter but various sources of such detailed information are given.

Considerable fundamental information is given on poultry raising, livestock production, increasing income from bees, food from home gardens, producing milk enough for family needs, fruit and berry production, as well as on marketing farm products. A very worthwhile chapter is devoted to ornamenting the country home for more pleasant living.

The reading of the book by any urban family that has a desire for country living is highly recommended. Naturally it does not answer all of an individual's questions but most of the "do's" and "don'ts" are presented in such an interesting way as to strongly stimulate interest in finding further detailed information on Farming for Security."

REFERENCE LIST

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SOIL CONSERVATION SERVICE

Devices for Measuring Rates and Amounts of Runoff Employed in Soil Conservation Research. SCS-TP-51. Compiled for Latin American Trainees—not available for general distribution. July 1943, revised October 1944. Processed.

Health and Vigor: Competition and Production. Regional Bulletin No. 97, Range Management Series No. 9. Regional Office, Soil Conservation Service, Albuquerque, N. Mex. November 1944.

Practical Results of Ten Years of Range Conservation and Erosion Control in Northwestern New Mexico. Regional Bulletin No. 96, Evaluation Series No. 4. Regional Office, Soil Conservation Service, Albuquerque, N. Mex. October 1944.

Report on Tests Made on Three Types of Flume Entrance. Soil Conservation Service, with the cooperation of the Minnesota Agricultural Experiment Station, St. Anthony Falls Hydraulic Laboratory, Minneapolis. August 1944.

OFFICE OF INFORMATION

U. S. DEPARTMENT OF AGRICULTURE

Decay of Logging Slash in the Northeast. Technical Bulletin No. 876. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration. September 1944. 10c.¹

Drought in the United States Analyzed by Means of the Theory of Probability. Technical Bulletin No. 819. Soil Conservation Service. Printed April 1942 (Released for distribution October 1944).

Farm Production, Farm Disposition, and Value of Buckwheat, 1909-41. Bureau of Agricultural Economics. October 1944. Processed.

Patent Manual for Employees of the United States Department of Agriculture. Miscellaneous Publication No. 551. A cooperative publication by the Office of the Solicitor and the Research Agencies of the Department of Agriculture. 1944.

Physical Land Conditions in the Western and Southeastern Baca County Soil Conservation Districts, Colorado. Physical Land Survey No. 30. Soil Conservation Service. 1944.

Prevention and Control of Gullies. Farmers' Bulletin No. 1813. Soil Conservation Service. Reprinted September 1944.

Sorghum Diseases and Their Control. Farmers' Bulletin No. 1959. Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration. October 1944. 10c.¹

STATE BULLETINS

Agricultural Economic News for Michigan. No. 32. Agricultural Extension Service, Michigan State College, East Lansing, Mich. July 1944.

Clovers for Greater Production in Western Washington. Circular No. 83. Agricultural Extension Service, State College of Washington, Pullman, Wash. June 1944.

Colorado Farm Bulletin. Volume VI, Number 5. Bimonthly Publication of the Agricultural Experiment Station, Colorado A. & M. College, Fort Collins, Colo. September-October 1944.

Comparison of Mixed Fertilizers Produced from Various Nitrogen and Phosphoric Acid Sources. Bulletin No. 450. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Current Farm Economics in Oklahoma. Vol. 17, No. 5. Agricultural Experiment Station, Oklahoma A. & M. College, Stillwater, Okla. October 1944.

Effect of the Use of Winter Legumes on Yields of Cotton, Corn, and Rice. Bulletin No. 451. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

An Efficient, Labor-Saving Method of Steaming Soil. Bulletin No. 635. Agricultural Extension Service, Cornell University, Ithaca, New York. January 1944.

Forest Trees and Shrubs: What, Where, and How to Plant. Bulletin No. 264. Agricultural Extension Service, Michigan State College, East Lansing, Mich. October 1944.

Greater Production through Research. Bulletin No. 443. Fifty-Fifth Annual Report of the Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Growth Status of the Cotton Plant as Influenced by the Supply of Nitrogen. Bulletin No. 446. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Improvement of Flood-Damaged Land in Eastern Oklahoma. Bulletin No. 282. Agricultural Experiment Station, Oklahoma A. & M. College, Stillwater, Okla. October 1944.

Losing Farms by the Truckload. Pamphlet No. 1 State Soil Conservation Committee, Blacksburg, Virginia. August 1944.

Maintenance of Alfalfa Stands. Bulletin No. 447. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Peanut Production Experiments, 1931-41. Bulletin No. 448. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Renovation of Established Pastures. Circular No. 74. Agricultural Extension Service, State College of Washington, Pullman, Wash. June 1944.

Results of Experiments with Rice in Louisiana. Bulletin No. 384. Agricultural Experiment Stations, Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La. August 1944.

Rotation, Cultural, and Irrigation Practices Affecting Rice Production. Bulletin No. 445. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Science for the Farmer. Bulletin No. 464. 57th Annual Report of the Agricultural Experiment Station, Pennsylvania State College, State College, Pa. July 1944.

Seed Treatment with Plant Hormones in Crop Production. Bulletin No. 444. Agricultural Experiment Station, University of Arkansas, Fayetteville, Ark. June 1944.

Selected Social Factors Affecting Participation of Farmers in Agricultural Extension Work. Special Bulletin No. 331. Agricultural Experiment Station, Michigan State College, East Lansing, Mich. June 1944.

Soil Reaction (pH): Some Critical Factors in Its Determination, Control and Significance. Technical Bulletin No. 400. Agricultural Experiment Station, University of Florida, Gainesville, Fla. August 1944.

Soybean Trials in Wyoming. Bulletin No. 267. Agricultural Experiment Station, University of Wyoming, Laramie, Wyo. August 1944.

A Survey of the Land Cover of Oconto County, Wisconsin: Land Cover Maps. State Department of Agriculture, Land Use Section, Madison, Wis. 1944.

Tensile Strength of Yucca Fibers. Technical Bulletin No. 316. Agricultural Experiment Station, New Mexico College of Agriculture and Mechanic Arts, State College, N. Mex. August 1944.

¹ From Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.